Requirements that must be included in Peabody's May 23, 2012 sampling plan (as modified by a submittal from Peabody on June 7, 2012):

1. Additional location for effluent, biological and physical habitat sampling.

EPA has requested that Peabody include an additional sampling location at an outfall downstream from current mining operations for the effluent, biological and physical habitat sampling in Peabody's proposed plan. During our conference call on June 6, 2012, EPA suggested conducting this sampling at NPDES outfall 054, based on the belief that Peabody was actively mining that area. Peabody agreed to conduct additional sampling at NPDES outfall 054; however, Peabody also explained that mining operations have not yet begun in that area. EPA is requesting that a different sampling location be proposed from a NDPES outfall that is located downstream from current mining operations. This location should be consistent with the coal mining priorities 1, 2, or 3 identified in our March 22, 2012 request, at pages 5-6. The effluent, biological and physical habitat sampling in Peabody's proposed plan would apply to this location.

2. Aluminum and vanadium included as parameters for effluent sampling.

Peabody has stated that it does not believe that aluminum and vanadium are "appropriate parameters" to sample for at Bear Run mine. However, these metals directly relate to Peabody's operations at Bear Run and EPA is more than justified in requesting sampling of these metals. Additionally, the sampling for these metals in addition to the metals already being sampled for is a minimal additional expense and does not pose a burden to Peabody. An outline of EPA's basis for requesting these parameters is set forth below.

- Peabody uses aluminum sulfate in its operations, as authorized by its SMCRA permit. Because Peabody uses aluminum in its operations, aluminum should be sampled for in order to accurately characterize effluent from discharges at the mine.

- EPA has required sampling of aluminum and vanadium at a mine site in Ohio. In fact, other EPA Regions include aluminum in all EPA water quality sampling plans for coal mines. Additionally, the Ohio DNR requires aluminum monitoring in its coal permits, since it has been found in coal mine effluent. Thus, Peabody is not the only company being required to test for these metals and EPA has a reasonable basis to ask for sampling of aluminum and vanadium based on data collected from other mining sites.

- Aluminum and vanadium are found in coal. The US Geological Survey (USGS) maintains a searchable database of coal quality by seam and formation across the US. The data include elemental analysis of all constituents in coal. *See* http://energy.er.usgs.gov/products/databases/CoalQual/index.htm.

- The USGS website listed above contains data about the constituents of coal located in Sullivan County, Indiana, which is where the Bear Run mine is located. The data shows that aluminum was detected in coal at levels from 800 – 15,000 part per million (ppm) with a median of 11,000 ppm. The data further shows that vanadium was detected in coal at levels from 9.6 - 31 ppm with a median of 20 ppm in 11 of 11 samples taken.

- Aluminum and vanadium sampling is required for Indiana NPDES individual permits if expected to be found in effluent. *See* http://www.in.gov/idem/4889.htm. Based on the USGS data described above, aluminum and vanadium would be expected to be found in effluent at the Bear Run mine.

- EPA developed a freshwater aquatic health criterion in 1988 that established an acute and chronic level of aluminum equal to 750ug/L and 87ug/L, respectively. Effluent and in-stream data collected by EPA at other coal mine sites demonstrates that there is reasonable potential to cause or contribute to a violation of narrative criterion for aluminum.

- All Indiana permits, including general permits, contain a narrative standard that allows for the establishment of a numeric limit for the protection of aquatic life and also provides for "no toxics in toxic amounts". *See* 327 IAC 15-4(1)(f). This permit narrative standard provides the means to determine the reasonable potential of a chemical parameter to have deleterious effects on aquatic life, and, if so, to calculate a numeric standard/limit that would be protective of aquatic life.

- Within the states in EPA Region 5, Michigan has a water quality standard for vanadium and Ohio has a water quality criterion for vanadium.

3. Cations and anion included as parameters for effluent sampling.

   EPA has requested that certain cations and anions be included as part of Peabody's effluent sampling. The cations are calcium, magnesium, sodium and potassium. The anions are bicarbonate and phosphate. Peabody has stated that it does not believe that these cations and anions are "appropriate parameters" to sample for at Bear Run mine. Upon additional research, EPA agrees that phosphate does not need to be included as a parameter. However, the other cations and anions must be included as parameters in order to evaluate the toxicity of effluent at Bear Run. Additionally, all cation sampling parameters are necessary to determine contributions of these chemicals to total dissolved solids (TDS). EPA has agreed to remove whole effluent toxicity (WET) testing from its request partly because cation and anion sampling parameters would provide for toxicity information to be obtained for discharges at Bear Run. It is also important to note that Ohio EPA has included in their draft general permit for coal mines the following cations: potassium, magnesium, sodium and calcium.

Thus, EPA has fully analyzed the requested sampling parameters with respect to Peabody's operations at Bear Run and with other similar mining operations. EPA has the authority under Section 308 of the Clean Water Act to request this information in order to, among other things, characterize the discharges from Bear Run, evaluate the necessity for any individual permit for the Site, and to develop and/or evaluate water quality standards. EPA appreciates the work that Peabody has put into the development of its plan and looks forward to receiving an update to the plan that includes the requirements listed above.